

The proposal of *Dasya anastomosans* (Weber-van Bosse) comb. nov. (Dasyaceae, Rhodophyta)

by

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Abstract: The name *Dasya pilosa* (Weber-van Bosse) A. Millar has become accepted in the current literature and is regarded as having the two heterotypic taxonomic synonyms *D. adhaerens* Yamada and *Dasyopsis anastomosans* Weber-van Bosse. The historical background of this synonymy is presented, including current ideas about the relationship between *Dasya* and *Eupogodon*. Because the oldest name available is *Dasyopsis anastomosans* Weber-van Bosse (1921), *Dasya anastomosans* comb. nov. is proposed as the correct name for this widely distributed tropical red algal species.

Introduction

Weber-van Bosse (1921) described three new species of *Dasyopsis*, including *D. anastomosans*, but did not refer to their collection sites. In the next part of her treatment of the benthic marine algae of the Siboga Expedition, she described another new species of *Dasyopsis*, *D. pilosa* (Weber-van Bosse 1923) and also indicated the type localities for her three species of *Dasyopsis* described two years earlier. The only location reported for *D. anastomosans* was the reef at Ambon, or Amboina Island (Indonesia). She also listed *D. palmatifida*, which she had described even earlier (Weber-van Bosse 1913).

As pointed out by Silva (in Silva et al. 1987) Zanardini's (1843) first use of *Dasyopsis* did not constitute a validation of that generic name. Zanardini had considered *Dasyopsis* to be a segregate genus from *Dasya* for *D. plana* C. Agardh and *D. spinella* C. Agardh. According to Silva (in Silva et al. 1987), it was Montagne (1846) who validated *Dasyopsis* as a subgenus within *Dasya* by providing a diagnosis, and the following year Montagne (1847) raised *Dasyopsis* to the generic level. In the meantime, however, Kützing (1845) established the genus *Eupogodon*, basing it on *E. planus* (C. Agardh) Kützing. Consequently, Silva (in Silva et al. 1987) made 15

transfers into *Eupogodon*, mostly of species that had been assigned to *Dasyopsis*. Included in these transfers were *E. anastomosans* (Weber-van Bosse) P.C. Silva and *E. pilosus* (Weber-van Bosse) P.C. Silva.

Materials and methods

The type specimens of *Dasyopsis anastomosans* and *D. pilosa* were received on loan from the Nationaal Herbarium Nederland, Leiden (L). A syntype specimen of *Dasya adhaerens* was located in the Herbarium of the University of Michigan (MICH). These materials were examined using a AO Spencer dissecting microscope.

Observations

The Holotypes of *Dasyopsis anastomosans* (L 0055790) and *D. pilosa* (L 0055854) were observed to be quite similar in habit, both consisting of dichotomously branched axes with a bushy aspect, with widely divaricate branch forkings. These type specimens have been depicted by Schlech & Abbott (1989), their fig. 17 (*D. anastomosans*) and fig. 27 (*D. pilosa*). The single specimen of *D. pilosa* is 7.5 cm tall, major axes 1.0-2.0 mm in diameter. Distal branches are densely beset with monosiphonous filaments 3-5 mm long. These filaments are mostly lost in the older axes. The Type of *D. anastomosans* consists of two cards of specimens, the larger one about 6.0-6.5 cm tall and with axes 1.0-1.5(-2.0) mm in diameter. Monosiphonous filaments are much less common in this pair of specimens, with some confined to the tips. These thalli of *D. anastomosans* appear to be denuded versions of *D. pilosa*. The anastomosing nature of the branches in the former, as stated by Weber-van Bosse (1921, 1923), is difficult to detect in the pressed specimen. This inspection of the types of these two species point to the conclusion that they represent the same species, *D. anastomosans* being a somewhat eroded form of *D. pilosa*.

A syntype specimen of *Dasya adhaerens* is in MICH, collected by Y. Yamada in January, 1939, from the Atoll of Ant. Like the collection depicted by Yamada (1944, pl. 7, fig. 1), the specimen in MICH consists of cylindrical axes 6 cm tall, about 4 times dichotomously branched, dark red in color, the upper parts of the thalli densely clothed with filaments, 3-4 mm long. Its morphological features conform to *D. anastomosans* and *D. pilosa*.

Discussion

Weber-van Bosse (1923) admitted that her *Dasyopsis anastomosans* was most closely related to her *D. pilosa*, both having long penicillate hairs surrounding the cylindrical axes. She separated these two species by the branching patterns: dichotomous in *D. pilosa*, alternate, secund, or pseudodichotomous and anastomosing in *D. anastomosans*. The only other means of differentiating this pair of species was the shape of the cells making up the hairs. *Dasyopsis pilosa* can be recognized supposedly because these cells have a uniform width (16 μm) along the entire length of the hair,

but in *D. anastomosans* the cells are wider in the center of the hair (28 μm) and narrower at the bases (16 μm) and at the apices (20 μm).

In their treatment of Hawaiian Dasyaceae Schlech & Abbott (1989) recognized *Eupogodon pilosus* as easily distinguishable from other Hawaiian Dasyaceae by its dichotomous branching pattern, its long, straight, soft monosiphonous filaments, its small discoid holdfast, and its lateral cystocarps. They also recognized *E. anastomosans*, which in their key was distinguished from *E. pilosus* by the thalli being “sparingly branched or not branched” and the monosiphonous filaments being “usually broken and matted”. As pointed out above, type specimens of *E. anastomosans* and *E. pilosus* were depicted by Schlech & Abbott (1989), and the striking fact is that the former is much branched throughout, in agreement with Weber-van Bosse’s (1921) statement “*Ramis alternantibus, secundarii aut pseudodichtomis, anastomosantibus*”. Schlech & Abbott suggested that *Dasya adhaerens* Yamada (1944) was likely conspecific with *E. anastomosans*, but their inability to find type material of *D. adhaerens* kept them from making a firm proposal. The syntype specimen of *D. adhaerens* discovered in MICH allowed me to confirm that it is conspecific with the pair of taxa described by Weber-van Bosse.

In recording this species from New South Wales, Millar (1990) proposed to transfer *Eupogodon* [*Dasyopsis*] *pilosus* to *Dasya* in that five discernible pericentral cells were produced. The lack of clearly recognizable pericentral cells was employed by some workers (Schmitz & Falkenberg 1897, Weber-van Bosse 1913, Kylin 1956) as one criterion to distinguish *Eupogodon* [*Dasyopsis*] from *Dasya*. This character, however, has been dismissed as unreliable (Parsons 1975), especially when an early onset of cortication makes it impossible to detect the presence or absence of pericentral cells.

Subsequently, Millar (1996) and de Jong et al. (1998) discussed and re-defined generic boundaries in the Dasyaceae. Millar (1996) recognized *Eupogodon* as having a primary bilateral organization, whereas *Dasya* is primarily radially developed. On the other hand, de Jong (1997) and de Jong et al. (1997) showed that *E. planus* (C. Agardh) Kützing, the generitype, has primary radial symmetry and later develops bilateral symmetry, resulting in an alternate branching pattern. In *E. spinellus* and other species of the genus, the axes are cylindrical with the primary radial symmetry retained, resulting in a spiral branching pattern. According to de Jong et al. (1997) the bases of the pseudolaterals in *Eupogodon* are polysiphonous and corticated, but the pseudolaterals in *Dasya* have monosiphonous bases and either lack cortication or are only slightly corticated.

Millar (1996) treated *Dasyopsis anastomosans* Weber-van Bosse as a heterotypic synonym of *D. pilosa*. He stated that both species are primarily radially developed and clearly belong within *Dasya*. According to him an examination of illustrations and authentic specimens of *E. pilosus* and *E. anastomosans* revealed that these two species “would appear to be conspecific”. *Eupogodon anastomosans* was also regarded as a taxonomic synonym of *Dasya pilosa* by de Jong et al. (1997). While recognizing *Dasya pilosa* (Weber-van Bosse) Millar from the Hawaiian Islands, Abbott (1999) stated that her “critical comparison of the type and many other specimens of the

Micronesian *Dasya adhaerens* Yamada (1944) strongly suggests that species is also conspecific" with *D. pilosa*. Weber-van Bosse (1923) expressed doubt about the distinctiveness of *D. pilosa* and *D. anastomosans*, and Abbott's examination of type and recent collections of these species led her to support this doubt. Abbott concluded that these three taxa [*D. pilosa*, *D. anastomosans*, and *D. adhaerens*] were conspecific. By examining types of these three taxa, I have confirmed these earlier conclusions. Abbott (1999) stated that the "earliest available name" is *D. pilosa*. However, this is incorrect. The name with priority is *Dasyopsis anastomosans* Weber-van Bosse (1921), predating her *D. pilosa* (Weber-van Bosse 1923). The following transfer is thus effected:

***Dasya anastomosans* (Weber-van Bosse) M.J. Wynne comb. nov.**

Basionym: *Dasyopsis anastomosans* Weber-van Bosse, 1921, p. 309, pl. VII, fig. X.

= *Eupogodon anastomosans* (Weber-van Bosse) P.C. Silva in Silva et al. (1987).

Tax. syn.: *Dasya pilosa* (Weber-van Bosse) A.J.K. Millar (1990).

Basionym: *Dasyopsis pilosa* Weber-van Bosse (1923).

= *Eupogodon pilosus* (Weber-van Bosse) P.C. Silva in Silva et al. (1987).

Tax. syn.: *Dasya adhaerens* Yamada (1944).

Additional records and distribution: Hawaii (Abbott 1999); French Polynesia (Payri et al. 2000); Tanzania (Jaasund 1976); Saudi Arabia (Basson 1979); Oman (Barratt et al. 1984); Bahrain (Basson et al. 1989); Mauritius (Ballesteros 1994); New South Wales and Lord Howe Island, Australia (Millar 1990, Millar & Kraft 1993); Queensland, Australia (Phillips 1997); Norfolk Island, South Pacific (Millar 1999); Micronesia (Yamada 1944, Taylor 1950); Papua New Guinea (Heijs 1985; Millar et al. 1999); Viet Nam (Dawson 1954).

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